Directions: Read the passage "A Brief History of Weather Reporting." Then answer the questions that follow.

A BRIEF HISTORY OF WEATHER REPORTING
by Mona Gedney

INTRODUCTION

Keeping track of the weather has always been a matter of national interest. Everyone watches weather reports on television, listens to them on the radio, and reads them in the newspaper or online. Like most people that live near the ocean, Floridians take a keen interest in what Mother Nature might have in store for us. Today we take weather reports for granted—but we didn't always have them. Nevertheless, keeping track of the weather has always been a matter of national interest.

THE EIGHTEENTH CENTURY

Americans have been fascinated by the weather from the country's birth. In 1776, Thomas Jefferson began recruiting the first volunteer weather observers in Virginia. Fifteen years later, there were 2,000 stations in the new United States of America, all of them manned by volunteer weather observers. These observers kept logs of local weather conditions and shared the information with others. Even George Washington kept a daily journal in which he recorded the details of that day's weather.

THE NINETEENTH CENTURY

In 1814, the Army Surgeon General first tried to gather weather observations from Army posts in a systematic way. By the 1850s, volunteer observers scattered across the country were reporting their weather to the new Smithsonian Institution by telegraph. Not until 1870, however, was the National Weather Bureau established under the control of the Army Signal Corps. In 1890, the Smithsonian officially took charge of the voluntary weather observers. In 1891, the Weather Bureau became part of the Department of Agriculture.

THE TWENTIETH CENTURY

In 1902, the Weather Bureau made an important technological leap with wireless telegrams. For the first time it was able to notify a ship at sea of weather predictions. In 1905, the first ship sent a weather bulletin to the Bureau while at sea. Another change occurred in 1910 when the Weather Bureau began to present weekly forecasts. They were intended to help the farmers with their planning. In 1915, the state of Illinois was the subject of an experiment. Daily forecasts were published using the new wireless technology. These informed farmers and other growers about such matters as imminent frosts and storms. Such information was vital to growers in all states, of course. Having enough advance warning could help to save citrus groves and other crops vulnerable to abrupt changes in weather. The experiment was so successful that before long, daily forecasts were in every newspaper in the country.

In 1940, President Franklin D. Roosevelt made the Weather Bureau a part of the Department of Commerce. He could see that knowing about the weather was important to the burgeoning aviation industry, and therefore to other businesses, too. In the 1940s, the Weather Bureau established a radar network that increased the amount of weather information. Radar provided valuable information about the movement of hurricanes so that residents had enough time to prepare themselves. Computer technology appeared in the 1950s, marking still another change in the kind of information available to weather forecasters.
In 1970, the Weather Bureau was renamed the National Weather Service and became a part of a larger organization in the Commerce Department called the National Oceanic and Atmospheric Administration (NOAA). The National Weather Service continued to make ever greater use of computers and radar, and it began to gather information from satellites as well.

Voluntary weather observers (now called Cooperative Weather Observers) remain a vital part of the chain of information. They were once the only source of weather information but that is no longer true. However, since weather conditions cannot be forecasted with 100% certainty, the observers still play a vital role in providing information on actual local conditions. The information they continue to provide will ultimately help with the improvement of weather forecasting models. It is estimated that today there are 12,000 volunteers at work in the country. In Florida, there are many Cooperative Weather Observers. Their centers are located at the National Weather Service Offices in Jacksonville, Key West, Melbourne, Miami, Tallahassee, Tampa Bay, and—for the West Florida counties—Mobile, Alabama.

CONCLUSION

No longer do we have to wait for a weekly or daily forecast. The computer offers immediate access to the weather in our own area, as well as information about weather around the globe. Improvements in communication have transformed weather forecasting just as they have all other aspects of our lives. Even with all of our technological advances, however, Mother Nature remains unpredictable. We are light years ahead of where we were two hundred years ago, but we still have far to go. In the meantime, the weather will remain a fascinating and extremely important subject.

1. In which part of the passage can you find information on actions taken by President Franklin D. Roosevelt?
   A. Introduction
   B. The Eighteenth Century
   C. The Nineteenth Century
   D. The Twentieth Century

2. Where were the first stations manned by volunteer weather observers located?
   F. Illinois
   G. Alabama
   H. Virginia
   I. Florida
According to the passage, the first weekly weather reports were intended to help

A growers.
B aviators.
C soldiers.
D businessmen.

Which kind of information does the author use most in this passage?

F expert opinions
G scientific facts
H historical facts
I personal observations

Directions: Please read the passage "Illinois Rain Forest." Then answer the questions that follow.

ILLINOIS RAIN FOREST
by Mona Gedney

When we think of rain forests, the term conjures up images of lush greenery in warm climates like Central America. Few of us would connect a rain forest with the state of Illinois, where icy winds sweep down from Canada most months of the year. Nevertheless, Illinois is home to a most unusual tropical rain forest. It covers more than 2,000 acres, contains towering trees, and is 300 million years old.

Miners were digging in a coal mine near Danville, Illinois in 2004. As they dug, they could see the outlines of logs and leaves above them. Miners are accustomed to finding plant fossils as coal is formed from great pressure applied to plant matter over millions of years. Still, this area of the mine had an unusual number of well-preserved specimens. Then an adjacent mine revealed more fossils preserved in its ceilings. Coal excavations were halted and paleobotanists, scientists who study fossil plants, were invited into the mine.

Since that time, the ancient rain forest has been carefully scrutinized. Paleobotanists descend 200 feet below the surface to do their work. On the ceilings above them they can see the remains of the largest fossilized rain forest yet discovered. The ceilings in the mines afford them an unusual look at a horizontal layer of fossils. Best of all, they are able to study an entire ecosystem, preserved in stone.

Before this discovery, scientists were forced to look only at isolated plant fossils. They could never be sure of what the whole forest looked like. But the Illinois rain forest is intact. Scientists can see exactly how things were 300 million years ago, during the Carboniferous Period. During this era, the climate produced great forests that later formed rich layers of coal.
In the Carboniferous Period, Illinois was close to the equator. The rain forest was located on a fault line that was causing the area to sink slowly. Then an earthquake occurred that very abruptly lowered the rain forest below sea level. Mud flooded into the area, keeping things pretty much as they were. The trees and plants drowned, but remained upright.

In that ancient forest, tree ferns and giant horsetails grew 30 feet high, creating a dense canopy. Piercing through the canopy were club mosses—trees that resembled giant asparagus stalks and reached 100 feet into the air. They towered above the lower canopy of ferns and shrubs. Not until late in their lives did they produce a "crown" of branches at the very top of the pole. The cones produced in that crown were often more than a foot in length. The trees' thick bark ultimately became a major ingredient of today's coal.

Scientists have compared the sudden death of the ancient rain forest to a much more modern event. During 1811 and 1812, earthquakes near the New Madrid fault shook the center of the United States. The quakes were as powerful as the famous San Francisco earthquake of 1906, which destroyed a large portion of that city. The New Madrid earthquakes created several sunken lakes, such as Reelfoot Lake in the northwestern corner of Tennessee, and submerged several forests. They rearranged the surface appearance of that part of the country, even changing the course of the Mississippi River.

The rain forest in Illinois was swallowed up during such a cataclysm, millions of years ago. However, the place where it was discovered today shows no signs of the prehistoric disaster. Above the forest of fossils stretch flat, peaceful meadows that offer no clue to the treasures that lie beneath.

To which genre does this passage belong?
A  story
B  biography
C  nonfiction
D  legend

What kind of passage is this?
F  persuasive
G  informational
H  narrative
I  dramatic
Which detail in the passage shows that the Illinois rain forest is unusual?

A  It lies close to the equator.
B  It lies 200 feet under the earth.
C  It contains a variety of plants.
D  It contains many types of cockroaches.

To understand more about the life cycle of "club mosses," a reader should ask

F  how they created a canopy.
G  why they had cones.
H  why they lived in coal-age forests.
I  how their bark became coal.

Which graphic would best enhance this passage?

A  a world map showing modern rain forests
B  a chart listing names of paleobotanists
C  a diagram showing the forest
D  a table comparing ancient and modern rain forests

Where would you look to find more information on why Illinois is no longer located near the equator?

F  an atlas from the 1800s
G  a geology book about continental drift
H  a chapter in an American History book
I  an encyclopedia entry on the equator
Which of the following would best illustrate the well-preserved underground rain forest?

A  a map showing the location of the Illinois coal mine
B  a photograph of plant specimens from a present day rain forest
C  a photograph of an actual plant fossil from the ancient rain forest
D  a picture of how Earth might have looked during the Carboniferous Period

Directions: Read the passage "The Oldest Fire in the World." Then answer the questions that follow.

THE OLDEST FIRE IN THE WORLD
by Laura Bresko

The oldest fire in the world has been burning for over 40 years, right here in the United States, and will probably continue for many years to come. In 1962, a fire in a landfill set off a blaze that still burns today. The landfill was built in an abandoned coal-mining pit. Tunnels dug in the walls of the pit led to an enormous seam of anthracite, an extremely dense form of coal. Flames from burning trash traveled through one of the mining tunnels and set off the coal. Although the fire stayed underground, it spread for acres and caused incredible damage. The resulting fumes, heat, and ground instability forced evacuations of local residents from the late 1960s through the early 1990s. The fire continues to spread and cause damage today. No known technology can extinguish the subterranean fire.

Until 1828, few people knew how to ignite anthracite and use it for fuel. Anthracite was so compacted that no ordinary flame could make it burn. Then a Scotsman named James Neilson invented the hot blast furnace. The air produced in the first chamber of the furnace was blown over anthracite, located in the second chamber. The hot air caused the surface of the anthracite to ignite. Because it was so dense, anthracite could produce enough heat to melt iron ore. It was also plentiful and a little went a long way, lowering the cost of iron production. Once the hot blast technique was perfected, anthracite was in demand all over the world. In the United States, anthracite is found exclusively in Pennsylvania. As a result, Pennsylvania's mining industry boomed during the nineteenth century. When newer fuels replaced anthracite in the twentieth century, the black gold rush ended and most anthracite mines were abandoned.
Abandoned mines dot the landscape in Pennsylvania's anthracite country. Towns often use the sites for landfills. Such was the case in Centralia, a small town built directly atop an anthracite seam. When the Centralia landfill caught fire, no one was alarmed; it was down in the ground and contained. They did not realize that Centralia's landfill was similar to Neilson's hot blast furnace. The trash in the landfill provided the fuel to heat up the air in the pit. Dumping continued and the trash burned for weeks, stoking the fire and making it extremely hot. The hot air released by the burning trash traveled through the empty mining tunnels and into the abandoned anthracite mines, causing the coal to ignite.

Despite efforts to douse the fire with water, the landfill continued to burn. Experts were brought in to help with the situation. Readings of the smoke coming from the landfill determined that burning coal was indeed producing some of the smoke. The warning came too late, though. Local fire fighters poured thousands of gallons of water into the landfill but the fire flared up again in a few days. The fire had already started burning into the Buck Mountain anthracite coal seam lying underneath Centralia, and no one could stop it. State and federal governments spent $3.3 million dollars on unsuccessful efforts to control the fire between 1962 and 1978.

By 1979, large pits in the earth began opening up where the underlying coal had turned to ash. The process, known as subsidence, swallowed roads and destabilized buildings. Pennsylvania Route 61 crumbled despite thousands of dollars spent by the state in 1983 to repair the road. Ground temperatures rose as high as 1000 degrees Fahrenheit just feet below the soil in some areas of town. Smoke rose from cracks in the ground, poisonous gases escaped, and plants withered. Centralia's gas stations closed from fear of explosions. Though residents desperately wanted to leave, they couldn't. Insurance companies canceled their homeowner policies and banks threatened foreclosure. The residents of Centralia were trapped.

In 1984, the U.S. Congress intervened. It appropriated $42 million for the State of Pennsylvania to buy homes from Centralia residents. Congress called this evacuation effort "voluntary acquisition" since the residents could choose not to sell their homes and remain in Centralia. Between 1985 and 1991, 545 residences and businesses were relocated. In 1992, the state government began condemning homes threatened by subsidence and noxious gases such as carbon monoxide. Some diehard residents remained in Centralia, though. According to the state's Department of Environmental Protection, Centralia's former population of 1,100 dropped to 46 by 1996. The current population stands at around ten.

Today, Centralia is an eerie ghost town. The wafting smoke and shifting soil are too dangerous for most to brave. The detour signs on Route 61 give no indication of the troubles in Centralia; most cars just veer around the smoldering town. But for those who are fascinated by the fire, Centralia has become a sort of Mecca. Tourists come to stare at the devastated landscape, and conspiracy theorists gather to share their outlandish ideas. The most hopeful of the visitors are the research teams. They study Centralia's soil, plants, and animals and believe that the effects of the fire will shed light upon the processes that created this planet. Though a terrible tragedy, the Centralia fire may someday lead to breakthroughs in science and technology.
The chart below explains how the choice of a landfill site ended up destroying Centralia. Read it carefully. Then choose the answer that belongs in the empty box.

Centralia chose an abandoned mine as the town’s landfill site and dumped their trash in it.

The landfill caught fire and burned at a high temperature for weeks.

The anthracite under Centralia ignited, destroying roads, buildings, and land.

F  Hot air from the fire traveled through the mine tunnels and into the abandoned anthracite mines.
G  Trash was packed into the tunnels and eventually reached the anthracite mines.
H  Firefighters doused the fire with water but it continued to burn.
I  Firefighters doused the fire with water and smoke traveled to the anthracite.
13 The boxes below contain details from the passage. Which answer choice is also a detail from the passage and belongs in the empty box?

- The Centralia fire is burning today and nobody knows how to stop it.
- Firefighters doused the landfill fire with water but it continued to burn.
- Ground temperatures rose as high as 1,000 degrees just below the surface.

A. The state government began condemning homes that had been burned by the fire.
B. Centralia's entire population of 1,100 residents was gone by 1996.
C. Detour signs on Route 61 warn travelers of the danger ahead, but tourists go to Centralia anyway.
D. Centralia residents couldn't leave because of insurance companies and banks.

14 The government had several reasons for evacuating Centralia. Which of the following was not a reason?

F. There was concern for public safety.
G. It was impossible to control the fire.
H. Repairing the main highway had become futile.
I. Firefighters used up all of the water.
This passage would most likely be found

A  on Pennsylvania’s Department of Tourism Web site.
B  in an encyclopedia.
C  in a science journal.
D  in a travel guide.

Explain how subsidence occurs and why it is a problem in Centralia. Use information and details from the passage to support your answer.